We claim:

1. A method of fabricating a ferroelectric thin film on an iridium-composite electrode in an integrated circuit device, comprising:

preparing a substrate;

depositing an iridium-composite bottom electrode on the substrate;

annealing the bottom electrode in a first annealing step;

depositing a buffer layer on the bottom electrode;

annealing the buffer layer in a second annealing step;

depositing a ferroelectric layer on the buffer layer;

annealing the ferroelectric layer in a third annealing step; and

completing the integrated circuit device.

2. The method of claim 1 wherein the bottom electrode is deposited by co-sputtering iridium and tantalum targets in an argon and oxygen ambient atmosphere.

3. The method of claim 1 wherein said first annealing step includes oxygen annealing of the bottom electrode at between about 600°C to 800°C for between about five minutes to one hour.

4. The method of claim 1 wherein said depositing a buffer layer includes depositing a layer of material taken from the group of materials consisting of HfO_2, ZrO_2, TiO_2, LaO_x, La-Al-O, Ti-Al-O, Hf-Al-O, Zr-Al-O, Hf-Zr-O , Zr-Ti-O, Hf-Ti-O, La-Zr-O, La-Hf-O, and La-Ti-O.

5. The method of claim 4 wherein said deposing a layer of buffer material includes depositing a layer of buffer material to a thickness of between about 3 nm to 30 nm.

6. The method of claim 4 wherein said depositing a layer of buffer material includes depositing by a technique taken from the group of techniques consisting of physical vapor deposition, sputtering, e-beam evaporation, CVD, PECVD and ALCVD.

7. The method of claim 1 wherein said second annealing step includes annealing in an oxygen ambient 20 is performed at between about 400°C to 800°C for between about one minute to one hour.

8. The method of claim 1 wherein said depositing a layer of ferroelectric material includes depositing a layer of $Bi_4Ti_3O_{12}$ to a thickness of between about 20 nm to 500 nm.

9. The method of claim 1 wherein said third annealing step annealing in an oxygen ambient atmosphere at between about 600°C to 800°C for between about five minutes to twelve hours.

10. A method of fabricating a ferroelectric thin film on an iridium-composite electrode in an integrated circuit device, comprising:

preparing a substrate;

depositing an iridium-composite bottom electrode on the substrate;

annealing the bottom electrode in a first annealing step;

depositing a buffer layer on the bottom electrode, including depositing a layer of material taken from the group of materials consisting of HfO_2, ZrO_2, TiO_2, LaO_x, La-Al-O, Ti-Al-O, Hf-Al-O, Zr-Al-O, Hf-Zr-O , Zr-Ti-O, Hf-Ti-O, La-Zr-O, La-Hf-O, and La-Ti-O;

annealing the buffer layer in a second annealing step;

depositing a layer of $Bi_4Ti_3O_{12}$, to a thickness of between about 20 nm to 500 nm, on the buffer layer;

annealing the ferroelectric layer in a third annealing step; and

completing the integrated circuit device.

11. The method of claim 10 wherein the bottom electrode is deposited by co-sputtering iridium and tantalum targets in an argon and oxygen ambient atmosphere.

12. The method of claim 10 wherein said first annealing step includes oxygen annealing of the bottom electrode at between about 600°C to 800°C for between about five minutes to one hour.

13. The method of claim 10 wherein said deposing a layer of buffer material includes depositing a layer of buffer material to a thickness of between about 3 nm to 30 nm.

14. The method of claim 10 wherein said depositing a layer of buffer material includes depositing by a technique taken from the group of techniques consisting of physical vapor deposition, sputtering, e-beam evaporation, CVD, PECVD and ALCVD.

15. The method of claim 10 wherein said second annealing step includes annealing in an oxygen ambient 20 is performed at between about 400°C to 800°C for between about one minute to one hour.

16. The method of claim 10 wherein said third annealing step annealing in an oxygen ambient atmosphere at between about 600°C to 800°C for between about five minutes to twelve hours.